

SMALL DEPRESSION POND (OPEN LILY POND SUBTYPE)

Concept: Small Depression Ponds are the mainland Coastal Plain small depression communities with permanent flooding or with hydroperiods lasting most of the growing season. The Open Lily Pond Subtype covers the deepest, most permanently flooded zones, where floating or submersed aquatic plants such as *Nymphaea*, *Lemna*, or *Utricularia* dominate. It generally occurs in zoned complexes with other depression communities.

Distinguishing Features: Small Depression Pond (Open Lily Pond Subtype) is distinguished from other Coastal Plain Depression Communities by having permanent or near-permanent standing water and lacking extensive emergent vegetation. Floating, floating-leaf, or submersed aquatic plants dominate, typically *Nymphaea odorata*, *Nuphar advena*, *Nymphoides aquatica*, *Lemna* spp., or *Utricularia* spp. This subtype largely lacks emergent marsh plants such as *Eleocharis equisetoides*, *Eleocharis elongata*, *Eleocharis melanocarpa*, *Rhynchospora tracyi*, *Rhynchospora inundata*, *Rhynchospora careyana*, *Panicum hemitomon*, *Leersia hexandra*, and *Panicum verrucosum*. Trees and shrubs are generally absent or sparse. This subtype should not be classified unless it covers a major part of the basin or covers a large area in a larger basin.

Floating Mat communities may also have permanent standing water but have dense floating vegetation bond together by roots and covering the water.

The Open Lily Pond Subtype is distinguished from Natural Lake Shoreline Marsh by occurring in small basins, with less than 20 acres of water. It is distinguished from Coastal Plain Semipermanent Impoundment by occurring in small natural basins in uplands rather than in impoundments in floodplains, with corresponding lack of stream flooding.

Synonyms: *Nymphaea odorata* - *Nuphar advena* - (*Nymphoides aquatica*, *Xyris smalliana*) Herbaceous Vegetation (CEGL004326).

Ecological Systems: Southern Atlantic Coastal Plain Depression Pondshore (CES203.262).

Sites: Small Depression Pond (Open Lily Pond) communities occur most often in limesink depressions, but a few are known in clay-based Carolina bays or other kinds of depressions.

Soils: Soils generally have a shallow muck layer on the surface. Soil surveys treat them as inclusions in surrounding map units or map them as water.

Hydrology: Ponds are flooded most of the time, with water drawing down only at the end of drier summers or in severe drought. Water is often a meter or more deep.

Vegetation: The Open Lily Pond Subtype is dominated by aquatic plants. *Nymphaea odorata* is nearly always present and usually dominant, though it may range from low to high cover. Some species of *Utricularia* is often present; *U. purpurea* most frequently noted but *Utricularia biflora*, *olivacea*, *gibba*, and other species have been noted. *Nuphar advena*, *Nymphoides aquatica*, *Brasenia schreberi*, *Myriophyllum laxum*, and *Lemna valdiviana* are sometimes present. Species rooted on the bottom, such as *Eleocharis vivipara* or *Juncus repens* may become evident when water levels are low. Emergent species shared with the Typic Marsh Subtype, such as *Hymenachne*

hemitomon, *Leersia hexandra*, *Eleocharis equisetoides*, or *Rhynchospora inundata* may be present in the edges but are limited in cover. Other emergent species such as *Xyris* spp. or *Eriocaulon* spp. may be present on the edges. In extreme droughts, when the bottom may be exposed for longer times, ruderal species such as *Cyperus* spp. may appear. Woody species usually are absent, but scattered individuals of *Taxodium ascendens* or *Nyssa biflora* may be present.

Range and Abundance: Ranked G3?. Most North Carolina examples are in the southeastern outer Coastal Plain but some reach the inner Coastal Plain and a few occur farther north. The synonymized association ranges to South Carolina and is questionably attributed to Georgia and Florida. Open lily ponds are more common in Florida, so the question is primarily about whether they should be regarded as the same association.

Associations and Patterns: The Open Lily Pond Subtype usually occurs in zoned complexes, where it occupies the center or the portion with deepest water. Not all zones are well developed in most depressions, but surrounding communities are likely to include the Typic Marsh Subtype or Cutgrass Prairie Subtype of Small Depression Pond, Small Depression Drawdown Meadow, Vernal Pool, or Small Depression Shrub Border. All of these communities often occur in close proximity in multiple patches in limesink clusters. The surrounding uplands in natural condition are dry or wet longleaf pine communities.

Variation: Ponds vary in their mix of aquatic plant species, but patterns of variation have not been identified.

Dynamics: The Open Lily Pond Subtype is subject to water level fluctuations, but it may be more stable than most of the other herbaceous depression communities because only the more extreme dry spells lead to loss of standing water. However, in such extreme times, Mullhouse, et al. (2005) documented that *Nymphaea* and other floating aquatics could completely disappear and that the vegetation was more susceptible to the establishment of new plants than was the denser marsh vegetation. Even with the water gone, the vegetation of the Open Lily Pond Subtype is unlikely to carry fire unless the pond has been dry long enough for a dense stand of grass to develop.

Comments: This community was called *Nymphaea* Pond (3.0.1) in Nifong 1998. Only a couple of examples are known in Carolina bays.

Rare species: Vascular Plants: *Bacopa caroliniana*, *Eleocharis elongata*, *Eleocharis robbinsii*, *Eleocharis vivipara*, *Eupatorium leptophyllum*, *Myriophyllum laxum*, *Paspalum dissectum*, and *Utricularia olivacea*.

Vertebrate Animals: *Alligator mississippiensis*, and *Rana capito*.

References:

Mulhouse, J.M., D. De Steven, R.F. Lide, and R.R. Sharitz. 2005. Effects of dominant species on vegetation change in Carolina bay wetlands following a multi-year drought. *Journal of the Torrey Botanical Society* 132: 411-420.

Nifong, T.D. 1998. An ecosystematic analysis of Carolina bays in the Coastal Plain of North Carolina. Ph.D. Dissertation, University of North Carolina, Chapel Hill.